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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,347	04/11/2006	Byung-Chan Kim	123037-06045881	3497

22429 7590 11/19/2007  
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EXAMINER
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CHANG, JENNIFER F

ART UNIT	PAPER NUMBER
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4158

MAIL DATE	DELIVERY MODE
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11/19/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,347	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> Jennifer F. Chang	<b>Art Unit</b> 4158	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/11/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Claims 1-5 are presented for examination.

#### ***Specification***

2. The disclosure is objected to because of the following informalities:
  - a. “a technology...have been also demanded, (page 2, line 13)” contains a grammatical error. The phrase should read “a technology...has also been demanded”
  - b. “Terry Kinchun Lo and Yeongming Whang discloses a technology, (page 2, line 18)” contains a grammatical error. The phrase should read, “...disclose a technology”
  - c. “Kathleen and Yahya implements, (page 3, line 3)” contains a grammatical error. The phrase should read, “Kathleen and Yahya implement”
  - d. “grand plate, (page 5, line 11)” appears to mean “ground plate” in light of the rest of the specification
  - e. “is same to, (page 7, line 27)” is non-idiomatic English and should read “is the same as”
  - f. “comparing to, (page 8, line 10)” is non-idiomatic English and should read “compared to”

Appropriate corrections are required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2003/0038750 A1) (hereafter referred to as US '750) in view of Chen (US 2003/0038749 A1) (hereafter referred to as US '749). US '750 teaches a planar inverted F antenna having a radiation patch, comprising:

a first radiation patch for radiating a signal (22, Fig. 2);

a ground means for grounding the first radiation patch (20, Fig. 2);

a feeding means (25, Fig. 2) for supplying an electric power to the first radiation patch; and

a short means (24, Fig. 2) having one side coupled to the first radiation patch and other side coupled to the ground means for shorting the first radiation patch, wherein the first radiation patch has one or more corrugated hollows ("chamfers," [0023]).

However, US '750 fails to disclose the first radiation patch is an asymmetrical shape of linearly tapered rectangle. US '749 teaches a radiation patch with an asymmetrical shape of linearly tapered rectangle (22, Fig. 2A). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the antenna in US '750 by tapering the overall shape of the radiating patch as taught in US '749 in order to

generate different lengths of electric current routes, thus further increasing the antenna operative bandwidth [0032].

5. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over US '750 in view of US '749, further in view of Kenoun et al. (US 2004/0075611 A1).

6. As to Claims 2-4, US '750 in view of US '749 teaches the antenna substantially as claimed as noted in paragraph 4, but fails to teach:

a second radiation patch coupled to one of a length side and a width side of the first radiation patch for extending an electrical length of the first radiation patch [Claim 2], wherein

the second radiation patch has a length shorter than the length of the first radiation patch [Claim 3], wherein

the length and a width of the second radiation patch are determined according to a desired resonant frequency [Claim 4].

Kenoun teaches an antenna comprising:

a second radiation patch (117, Fig. 1) coupled to one of a length side and a width side of the first radiation patch (110, Fig. 1) for extending an electrical length of the first radiation patch [Claim 2], wherein

the second radiation patch has a length shorter than the length of the first radiation patch (Fig. 1) [Claim 3], wherein

the length and a width of the second radiation patch are determined according to a desired resonant frequency ([0018], lines 21-24) [Claim 4].

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the antenna of US '750 in view of US '749 by coupling a second radiation patch to the first radiation patch to provide additional means of altering the electrical length of the antenna without consuming additional space in the plane of the first radiation patch, and allowing the antenna to be tuned to other frequencies [0016].

7. As to Claim 5, US '750 further teaches the number of corrugated hollows and the predetermined length and width of the corrugated hollows are determined according to the desired resonant frequency (both the number of hollows and the length and width of the hollows affect the overall length of the current path, which affects the operating frequency band of the antenna, [0011]). US '749 further teaches a ratio of taper in the first radiation patch is determined according to the desired resonant frequency (the ratio of taper also affects the length of the current route, which affects the frequency band of the antenna, [0020]). As noted in paragraph 4, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the antenna in US '750 by tapering the overall shape of the radiating patch as taught in US '749 in order to generate different lengths of electric current routes, thus further increasing the antenna operative bandwidth [0032].

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer F. Chang whose telephone number is (571)

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270-3831. The examiner can normally be reached on Monday through Thursday  
7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on (571) 272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer F Chang/  
Examiner, Art Unit 4158

/Walter Benson/  
Supervisory Patent Examiner, Art Unit 4158